

Case 162-CIP-DIV2-U.S.

## IN THE U.S. PATENT AND TRADEMARK OFFICE

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Applicants:	Charles W. Finkl et al	)	
		)	
Serial No.:	10/767,037	)	Attention:
		)	
Filing Date:	January 28, 2004	)	Examiner Scott Kastler
		)	
Title:	Apparatus for Softening	)	Art Unit 1742
	a Selected Portion of	)	
	a Steel Object by Heating	)	

The Honorable Commissioner  
of Patents and Trademarks  
Washington, DC 20231

**DECLARATION  
IN SUPPORT OF AMENDMENT  
RESPONSIVE TO 08/24/2005 OFFICE ACTION**

Algirdas A. Underys states as follows:

1. I have reviewed the August 24, 2005 Office Action, the Butler et al, Basinger, Nishikawa and Roth references cited therein, and proposed claim 1 which was attached to the "DISCUSSION DOCUMENT FOR INFORMAL DISCUSSION WITH EXAMINER PRIOR TO OFFICIAL RESPONSE TO AUGUST 24 OFFICE ACTION".

2. It is my understanding that this Declaration is being submitted as part of an amendment responsive to the August 24, 2005 Office Action, and that the "claim 1"

mentioned in the preceding paragraph will be also submitted as part of said amendment.

3. The apparatus claimed in this application SN 10/767037 must function to soften only a layer of flat tool steel material exposed to the heat source, leaving the great balance of the tool steel material, which is in continuous integral relationship to the softened layer, unaffected to the maximum extent possible.

This is because the softened layer is never intended to do shaping work; it is intended only to absorb shock loads transmitted to it by the hard, non-softened balance of the tool which results from contact of the tool with a workpiece which is undergoing shaping by the tool.

4. If the softened layer of the tool is too thick, then as the hardened thickness of the tool decreases due to rework of the face of the work contacting surface of the hardened portion (due to shaving 1/2" layers off the working surface whose cavities have gone oversize), the life of the tool becomes unacceptably short.

5. In other words, it is essential that only a short depth of the flat tool be softened, and that that softening be as uniform in depth as possible.

6. If the circularly oriented heating wires 18 of Butler et al were applied to the tool of my invention a softened layer and an underlying hardened portion would not be attained; either my tool would be (1) softened all the way through or (2) softened on all faces, but in either case it would become totally useless. It is essential that the heat source portion of my apparatus be constructed to have a flat configuration co-extensive with the entire flat surface of the tool undergoing treatment.

7. If the circularly oriented induction heating coils 20 of Basinger were applied to the tool of my invention a softened layer and an underlying hardened portion would not be attained; either my tool would be (1) softened all the way through, or (2) softened on all faces, but in either case it would become totally useless. It is essential that the heat source portion of my apparatus be constructed to have a flat configuration co-extensive with the entire flat surface of the tool undergoing treatment.

8. If the narrow strip heat source of Nishikawa (which confines heating to a strip only of the entire flat surface of the workpiece) were applied to the tool of my invention the worst possible result would result, because those portions of the untreated area lying on either side of the treated strip would retain their original hardness, and these side areas are the areas in which the filets 17 and 18 (shown in my Figure 1) are formed; by retaining their original hardnesses, the cracking (shown at 19 in my Figure 1) would inevitably follow - which is the precise result my invention seeks to eliminate. It is essential that my heat source portion of my apparatus be constructed to have a flat configuration co-extensive with the entire flat surface of the tool undergoing treatment.

9. If the encircling induction heater 7 of Roth were applied to the tool of my invention a softened layer and an underlying hardened portion would not be attained; either my tool would be (1) softened all the way through or (2) softened on all faces, but in either case it would become totally useless. It is essential that the heat source portion of my apparatus be constructed to have a flat configuration co-extensive with a single flat surface of the tool undergoing treatment.

10. In the early experiments which preceded the filing of the application, the heat source was arranged around the tool. This was in line with conventional apparatus and thinking, but the desired differential heating pattern was not obtained; only when the heat source portion of my apparatus is constructed to have a flat configuration co-extensive with the entire flat surface of the tool undergoing treatment is my apparatus effective.

All statements made herein of my own knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

A. FINKL & SONS CO.



Algirdas A. Underys  
Inventor

October 26, 2005

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